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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,737	09/07/2006	Chris T. Vild	MLCZ 2 00126	9369
27885	7590	05/06/2008		
FAY SHARPE LLP 1100 SUPERIOR AVENUE, SEVENTH FLOOR CLEVELAND, OH 44114			EXAMINER CHEN, CHRISTINE	
			ART UNIT	PAPER NUMBER
			1793	
			MAIL DATE	DELIVERY MODE
			05/06/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/580,737	<b>Applicant(s)</b> VILD ET AL.	
	<b>Examiner</b> CHRISTINE CHEN	<b>Art Unit</b> 1793	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 September 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/26/06 and 7/2/07</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 18-20 are drawn to a method for extending the life of a material submergence device, however there are no active process steps involved in said method, rendering the scope of the claims indefinite. While a “confining” step involving a confining the submergence device with a structure made from a material that has a greater tensile strength is cited, this is not an active step and would inherently occur given the structure of the apparatus presented in claims 1-17 and 21.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Gilbert (US 3586304).

Gilbert teaches a furnace (10) comprising a submergence device well, a submergence device well (18), a pump well (16) in communication with the

submergence device well, a dross well (20) in communication with the submergence device well, and a removable submergence device (56) disposed in the submergence device well (see Figure 1 and column 5 lines 1-15 and lines 49-63).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-7, 9-10, 14-15, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vild (US 6217823) in view of Mordue (US 6451247).

In US patent 6217823 issued to Vild, a scrap submergence device comprising a body comprised of a refractory material that defines a submergence chamber is disclosed, wherein the body includes a vertically upward sloped inlet passage for allowing material to enter the submergence chamber. The inlet passage is at least substantially tangential to an inner surface of the submergence chamber and is disposed in a side wall. The body defines an outlet opening disposed in a base at substantially a same height within the submergence chamber as an inlet opening. The submergence device further comprises an outlet extension tube connected to the body and in communication with the outlet passage (see Figures 2 and 4, column 3 line 47- column 4 line 28, and claims 1-3, 12, 16, 20). Vild however, does not disclose the use of rods inserted into the chamber body in order to put the body under compression.

Mordue teaches that it was known in the art at the time the invention was made to employ rods to place refractory bodies under compression in molten metal applications, wherein a biasing member is disposed at one end of the rod and a retaining element at the opposite end. Mordue also teaches the use of rods to join objects together (see Figure 5 and column 1 lines 8-18, column 2 lines 15-21, column 3 lines 1-31 and column 5 lines 10-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to additionally include the rods of Mordue in the refractory body of the submergence chamber of Vild for the purpose of more securely connecting the parts of the chamber body by placing them under compression and to join parts together.

In the combining of the rods of Mordue in the refractory body of the submergence chamber of Vild, a passageway for the rods would be inherent.

With regards to the plurality of rods recited in claim 9, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a plurality of rods to facilitate further compression of the chamber body parts.

With regards to the riser tube required by claim 15, in US 6451247 issued to Mordue, Mordue uses a riser tube extending upwardly from the base and in communication with the outlet passage in order to transport molten material to another location (see Figure 2 and column 2 lines 26-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the riser tube of Mordue to the submergence device

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taught by Vild and the rods of Mordue in order to facilitate the transportation of molten material following the submergence device.

7. Claims 8, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Vild (US 6217823) and Mordue (US 6451247) and further in view of Nissim (US 2386565).

The references described in paragraph 6 above, Vild and Mordue, do not disclose the use of a frame to limit thermal expansion or contraction.

Nissim teaches that it was well known in the art to use a steel frame to take up mechanical stresses caused by thermal expansion of the material supporting said frame (see page 3 lines 5-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to additionally include the frame of Nissim to the submergence device taught by Vild and the rods of Mordue, in order to ease the mechanical stresses caused by the thermal expansion and contraction of the sidewalls.

8. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Vild (US 6217823) and Mordue (US 6451247) and further in view of Hall (US 1773729).

The references described in paragraph 6 above, Vild and Mordue, do not disclose the removal ability of the side wall with respect to the base, wherein the side wall includes a notch and the base a protrusion in which said notch is received when the side wall and the base are joined.

Hall teaches that it was known in the art at the time the invention was made to have a notch and protrusion arrangement in a refractory wall, wherein the interlocking creates a fluid tight seal and facilitates the removal of wall parts (see Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to additionally include the interlocking of notches and protrusions as recited by Hall to the submergence chamber taught by Vild and the rods taught by Mordue in order to facilitate the removal of the side wall and base.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Vild (US 6217823) and Mordue (US 6451247) and further in view of Gilbert (US 6036745).

The references described in paragraph 6 above, Vild and Mordue, do not disclose a means for controlling vortex flow of molten metal inside the submergence device.

Gilbert teaches that it was known in the art at the time of the invention to use a diverter for controlling vortex flow of molten metal inside a submergence device (see "Summary of the Invention" section and column 3 lines 26-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to additionally include a means for controlling vortex flow as recited by Gilbert in the submergence chamber taught by Vild and the rods taught by Mordue in order to facilitate greater control in the submergence device.

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10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Vild (US 6217823) and Mordue (US 6451247) and further in view of Gilbert (US 5310412).

The references described in paragraph 6 above, Vild and Mordue, do not disclose a gas injection inlet.

In US 5310412, Gilbert discloses a submergence device which forms a vortex via an impeller, wherein a gas injection inlet is present in said impeller and associated with a gas source (see abstract and column 8 lines 18-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the gas feature of Gilbert in the submergence device taught by Vild and the rods taught by Mordue in order to facilitate in situ metal refining (degassing, demagging) during scrap melting via a gaseous refining agent.

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vild (US 6217823) combined with Hall (US 1773729).

In US patent 6217823, Vild discloses a furnace (10) comprising a submergence device well (16); a pump well (14) in communication with the submergence device well and a dross well (18) in communication with the submergence device well (see Figure 1). In other words, Vild teaches all the claim limitations of claim 21 except the removal feature of the submergence device.

However, the interlocking feature of notches and protrusions taught by Hall seen in paragraph 8 above, would allow for the removal feature of the submergence device.

It would have been obvious to one of ordinary skill in the art to add the interlocking feature of notches and protrusions taught by Hall to the furnace taught by Vild in order to facilitate the removal of the submergence device.

### ***Double Patenting***

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 1, 4-6, 10 and 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 and 19 of copending Application No. 10/723504 in view of Mordue (US 6451247). Although the conflicting claims are not identical, they are not patentably distinct from each other because the pending claims of the co-pending application substantially comprise every limitation of the claims of this application, except for the use of rods to place the submergence device under compression. As discussed in paragraph 6 above, Mordue teaches the use of rods for such a purpose in molten metal applications. It would have

been obvious to one of ordinary skill in the art at the time of the invention to modify the device covered by the claims of copending application 10/723504 by placing the submergence device under compression.

This is a provisional obviousness-type double patenting rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE CHEN whose telephone number is (571)270-3590. The examiner can normally be reached on Monday-Friday 8:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/

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